The Rural Utilities Service ("RUS"), in its January 27, 1998 *ex parte* presentation to the Commission in CC Docket 96-45, argued for a higher bandwidth of 500 to 4000 Hz. RUS explained that subscribers in rural America are the ones with long loops (over 18,000 feet) that require treatment which restricts bandwidth. If loop treatment is engineered for a cutoff of 3000 Hz, then those subscribers accessing information services via computer modems will be restricted to speeds lower than 28.8 kbps – less than the data transmission rate of modems now provided with popularly-priced PCs.[28]

Given the imminent deployment of new technologies such as xDSL and cable modems, however, consumers' expectations of high-speed data capabilities can be expected to increase to the range of 1-5 mbps -- data rates which FWA will be able to support. In contrast to the limits of the service grade to be supported by the USF, FWA can provide wireline equivalent services, including high speed fax and modem offerings. These capabilities are consistent with subscriber demands, and are not available from current wireless technologies which are geared toward mobile. These expectations and values are satisfied by the more stringent AT&T and Bellcore operating principles, which an FWA solution can readily satisfy.[29]

State regulators also recognize the expectations and need of subscribers in less dense areas for robust communications capabilities. At its 1998 Winter Conference in Washington, D.C., the National Association of Regulated Utility Commissioners ("NARUC") expressed concern for the FCC's definition of the minimum bandwidth required for universal service support, and passed a Resolution requiring the provision of

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[28] The bandwidth situation is similar for service provided via mobile cellular and satellite systems. While they will meet the ANSI bandwidth requirements, they often must take special measures to provide data modem tone transparency, and even so are limited to lower data rates of 14.4 or 19.2 kbps. *See e.g.*, Northern Telecom Comments in RM-8837, at p. 11, filed August 12, 1996.

[29] Northern Telecom ("Nortel") submitted a relatively comprehensive comparison of the different capabilities of FWA, wireline and mobile wireless services in its comments on the DSC petition for rulemaking. *See e.g.*, comments of Northern Telecom in RM-8837, at p. 13, filed August 12, 1996.

full bandwidth loops in order to support full speed modem access for rural consumers.[30] In rural areas, FWA can provide the broad range of capabilities expected by subscribers, while costing less than the comparable universal service-supported wireline service that offers less robust capabilities.

MTI has carefully studied Nortel's FWA system, as well as evaluated the progress to date from the JSC analysis to determine the likelihood that successful sharing will be technically feasible. As a result of those reviews, MTI has concluded that Nortel's FWA technology using the 3.4 - 3.7 GHz band should be able to coordinate sharing with the DoD use of the band. Petitioners anticipate, in light of the global harmonization of FWA services in the 3.4 - 4.2 GHz band, that equipment will become available for operation in this band from a number of sources. Indeed, Petitioners understand that a number of other vendors are committed to adapting their systems to operate in the 3.4 - 3.7 GHz band in other countries, and that some of those vendors are also considering submitting their systems to the JSC analysis process with a view to also making them available in the United States (subject to appropriate deployment and coordination agreements with NTIA and DoD). Thus, carriers desiring to use FWA technology in the 3.4 - 3.7 GHz band will be assured of a choice of equipment vendors.

The 3.4 - 3.7 GHz Band

The Petitioners have focused on the 3.4 - 3.7 GHz band because of the immediate availability of commercial solutions. The Petitioners do not seek to displace or constrain the incumbent government users in this band, and therefore recognize that it will be necessary to share and coordinate this band technically with NTIA and the DoD.[31]

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[30] See *Resolution of Definition of Voice Grade Service for Universal Service Purposes*, NARUC web site at http://www.naruc.org/Resolutions/winter98.htm

[31] The Petitioners fully expect that the JSC/Nortel analysis will determine that such sharing is technically feasible, and believe that their own experimental program pursuant to the FCC experimental license will further confirm this conclusion.

The 3.4 - 3.7 GHz band is a good compromise between the range and congestion experienced at lower frequencies, and the bandwidth/coverage limitations inherent in the higher frequencies. This petition is not intended to create a new, high volume, wide area or "premium" service. Rather, it seeks to provide carriers with an economical wireless option as a means of meeting the service needs and expectations of their customers in low-density situations. Although such "niche" uses are not universal, these low-density situations exist in many parts of the country beyond the Petitioners' immediate needs in Arizona.

The Petitioners propose to make productive use of the 3.4 - 3.7 GHz band in these situations by selectively sharing a band that is not fully utilized by the U.S. Government, but which cannot simply be released to the non-government sector because of the critical services provided by the government using this band. Allocation of this spectrum as proposed represents a "win-win" situation for the U.S. Government, telecommunications regulators, MTI, Saddleback (and similar operators) – and, most importantly, for the long suffering unserved and underserved customers who make up a significant part of our communities.

III. LICENSING AND SERVICE RULES FOR FWA SERVICE

Given the technical and service characteristics of the Fixed Wireless Access technology, as well as the anticipated constraints associated with the need for careful frequency coordination with the Department of Defense and NTIA, the Petitioners submit that the rules for licensing and regulation of FWA can readily be integrated into the current structure for licensing fixed services to common carriers reflected in Part 101 of the Commission's Rules.[32] Like FWA, the microwave frequencies and fixed terrestrial radiocommunications services regulated under Part 101 are generally used to provide cost-effective supplements and/or replacements for wireline telecommunications facilities

[32] 47 C.F.R. § 101.

covering specific, relatively limited geographic areas. Moreover, because of the generally limited geographic coverage and the service/system-supplemental nature of the frequency usage, Part 101 licensees are required to carefully coordinate their frequency usage in order to efficiently utilize and share the available spectrum. This type of regulatory model is well suited to FWA. FWA frequencies will need to be coordinated among other common carriers as well as the DoD, and will be used in the provision of common carrier services.

Like point-to-point microwave frequencies regulated under Part 101, contention for specific FWA frequencies by multiple eligible carriers in specific areas is not expected. As discussed above, FWA is most valuable as a supplemental/replacement technology to provide lower-cost basic exchange service in lower subscriber density areas.[33] Such areas are unlikely to attract more than a few competing local exchange carriers or other service providers desiring to offer service using FWA technology. Accordingly, with the exception of areas where there will be extraordinary DoD sharing constraints imposed on FWA operations, well-established frequency management techniques and the amount of available bandwidth should provide sufficient FWA frequencies for all eligible and viable FWA operators. Again, this is traditionally how the microwave frequencies regulated under Part 101 Fixed Service are shared. In the unlikely event that there are mutually exclusive applications for the same location which cannot be resolved by direct cooperation between the applicants, an appropriate auction process should be used to award the license.[34]

The Petitioners thus propose that FWA be regulated under the Part 101 rules, with some modifications to those rules to accommodate the specific nature of FWA

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[33] As subscriber density increases, of course, other technologies become more cost efficient.

[34] The necessity to use auctions is reduced by the obligation of the Commission under Section 309(j)(6)(E) of the Communications Act to "use engineering solutions, negotiation, threshold qualifications, service regulations, and other means to avoid mutual exclusivity in application licensing proceedings."

technology in support of common-carrier services. These changes include the addition of some new FWA-related definitions to Subpart A (General) of Part 101, specific inclusion of FWA in some of the Subpart B (Applications and Licenses) language, and some modifications to the technical provisions in Subpart C (Technical Standards), which will be determined following receipt of the Nortel/JSC studies. The Petitioners also propose to add a new Subpart N (entitled "Fixed Wireless Access") to include a limited number of FWA-specific requirements. The Petitioners do not believe it will be necessary to modify Subparts D through M (Technical Operation, Miscellaneous Common Carrier Provisions, Developmental Authorizations, and the specific rules for other fixed terrestrial microwave services) to account for FWA.

It will not be necessary to craft a wholly new regulatory scheme for FWA, instead the licensing and service rules for FWA can be pieced together using previously developed rules from other services. As noted above, however, proposed specific coordination parameters for sharing with the government users are best addressed following the completion of the Nortel/JSC studies currently underway. The Petitioners suggest, in any event, that coordination with the government users be a pre-filing requirement.

Eligibility for a FWA license should be restricted to common carriers (or operators providing capacity to those carriers) certificated by the Commission or an appropriate regulatory authority for the area in which the carrier seeks to offer service using FWA technology.[55] The Petitioners also propose that the carrier would define its service area in its nodal/base station application(s), and that each nodal/base station would be individually coordinated and licensed, but that subscriber transceivers operating

[55] Such an eligibility requirement is similar to the rules applicable to the Rural Radio/BETRS service. *Cf.*, 47 C.F.R. § 22.702.

with the nodal/base station would not be individually licensed.[36] The proposed modifications to Part 101 are described in greater detail in the attached Appendix A.

[36] The Commission uses a similar licensing scheme for the DEMS service, whereby nodal stations are individually licensed, but the subscriber stations are authorized under the nodal station license. *Cf.* 47 C.F.R. § 101.503.

IV. CONCLUSION

The Petitioners urge the Commission promptly to issue a notice of proposed rulemaking to amend the table of frequency allocations to allow sharing between the Fixed Service and Radiolocation on a CO-PRIMARY basis in the 3.4 - 3.7 GHz frequency range, and to amend the Fixed Service Rules (Part 101) to accommodate the fixed wireless access technology.

Respectfully submitted,

Mountain Telecommunications Inc.

By: Jack Pleiter /jrc
Jack Pleiter, President & CEO

Saddleback Communications Inc.

By: Michael Scully /jrc
Michael Scully, President & General Manager

September 30, 1998

Appendix A: Proposed Changes to C.F.R. Part 101

The following discusses how FWA would be incorporated into the current Part 101 of the Commission's Rules. In order to facilitate Commission issuance of an NPRM, the Petitioners have either described the necessary rules or proposed specific language.

Subpart A - General

First, the Subpart A definitions must be revised to include those relating to FWA. The definition of "Fixed Wireless Access (FWA)" is proposed as follows:

> "In accordance with Subpart N (Section 101.___), a fixed microwave radio service in which appropriately certified local or basic exchange carriers and those qualified Small Businesses are licensed to provide local, basic or advanced exchange access service to subscribers via radio telecommunications, using frequencies in the 3.4 to 3.7 GHz band. Small business qualification shall be determined pursuant to 47 C.F.R. Sections 1.2110(b)1), 1.2110(b)(2) and 1.2110(b)(4)."

In addition, it will be necessary to add definitions of "Fixed Wireless Access Nodal Station" and of "Fixed Wireless Access User Station," respectively, as follows:

> "A fixed point-to-point or point-to-multipoint radio station in a Fixed Wireless Access service providing two-way communications with Fixed Wireless Access User Stations."

> "Any one of the fixed microwave radio stations located at users' premises, providing two-way fixed access, through a Fixed Wireless Access Nodal Station, to a telecommunications network."

Subpart B - Applications and Licenses

Broadly, the Subpart B general filing requirements and application processing procedures will apply to FWA with the following general features:

> The standard Subpart B eligibility requirements apply, with the addition in Section 101.7 or the proposed new Subpart N of the specific FWA requirement that applicants must be eligible licensees under Subpart A. The following language would be included in Section 101.7 or Subpart N:
>
> > "Only eligible licensees under Subpart A are eligible to hold authorizations for Fixed Wireless Access Nodal Stations."

The standard Subpart B application requirements apply. These include the technical coordination requirements specified in Section 101.103 and the standard public notice and comment process. In addition, the Section 101.103 rules would specify pre-filing coordination with NTIA on behalf of the government users in the 3.4 - 3.7 GHz band:

> "*Special requirements for operations in the band 3.4 - 3.7 GHz.* In addition to coordination with other FWA licensees, applicants must complete coordination with the government users in this band through the National Telecommunications and Information Administration with regard to each proposed Fixed Wireless Access Nodal Station, and shall include with the application evidence of completion of such coordination."

Section 101.5(b) should be modified to indicate that a separate application form must be filed for each Fixed Wireless Access Nodal Station. No separate individual license would be required for subscriber stations as long as they meet certain technical requirements (*e.g.*, they transmit on less than 60 watts EIRP and do not require FAA notification). This change would thus provide parallel treatment of nodal and user station licensing for FWA and DEMS.

Under Section 101.11, FWA station application processing fees would be specified in 47 C.F.R. Chapter 1. Thus, it will be necessary to amend Section 1.1102 to add a fee category for Fixed Wireless Access with the fees similar to the Digital Electronic Message Service fees (47 C.F.R. § 1.1102(44)). Likewise, FWA licensees would be required to pay annual regulatory fees, presumably with a fee for each nodal/base station license and a fee for each subscriber.

The Part 101 Rule's other standard Subpart B application processing requirements would be applicable to Fixed Wireless Access. In the case of mutually exclusive license applications which cannot be resolved by direct cooperation between the applicants, an appropriate auction process would be used. As described above, however, the Petitioners expect that instances of mutual exclusivity will be rare, in light of the eligibility requirements and the nature of the markets to be served by Fixed Wireless Access.

The Subpart B Rules on license transfers, modifications, conditions and forfeitures would also be applicable, and need not be modified to accommodate Fixed Wireless Access. These Rules include the ten year license period and the eighteen month construction period. MTI and

Saddleback believe these are reasonable periods for FWA capital deployment and recovery.

Subpart C - Technical Standards

In order to ensure the maximum flexibility for evolution of future services and radio schemes, technical standards would be limited to the minimum necessary to assure successful spectrum management, co-existence and the avoidance of interference. This would include typical power and spectrum masks, antenna characteristics and sub-banding plans applicable to the various technologies involved. Because the international development of the technical parameters for FWA is still evolving, the Petitioners expect to supplement the record later with more detailed proposals. Extensive work is currently in progress within ETSI/CEPT, CITEL and the various Administrations already deploying these multi-vendor technologies. The Petitioners believe that these principles should be adopted within the United States to the maximum extent possible in order to achieve the full economies of scale and scope that come from international harmonization of FWA. Nortel has committed to provide details of these specifications and international standards to the Commission as part of the rulemaking process at the appropriate time, and that Nortel will cooperate with other vendors of FWA equipment to ensure a consistent set of standards and practices within the United States.

In addition, the unique situation within the United States of various radiolocation services in these bands on a PRIMARY basis means that before any specific technology or vendor can offer equipment for use in this band in the United States, its system and technology must be analyzed and tested for potential interference to/from the various radiolocation systems. In addition, the Petitioners expect that the U.S. Government, through NTIA, will develop coordination criteria or technical specifications of FWA equipment so that carriers using FWA in the 3.4 - 3.7 GHz band will avoid interference to the government users, without requiring changes in equipment or operating procedures by the Department of Defense or other Government users. The appropriate technical criteria should be incorporated into Subpart C or the proposed new Subpart N of Part 101.

The analyses and any necessary testing will presumably be carried out by the Department of Defense Joint Spectrum Center, with the subsequent coordinations administered by the NTIA and DoD (taking into account the classified nature of some of the Government systems and deployments). Vendors desiring to market FWA equipment in the United States in the 3.4 - 3.7 GHz band would need to provide the appropriate technical data for their systems to the JSC/NTIA and fund the necessary technical analysis/testing activities by the JSC. Similarly, the costs of pre-filing coordination with the NTIA could be covered by specific fees, and if necessary, the Petitioners will work with the government to ensure that NTIA has appropriate authority to collect such reasonable user fees.

Subparts D through M - Technical Operation, Miscellaneous Common Carrier Provisions, Developmental Authorizations, Other Services

Given the common carrier nature of FWA usage, Subparts D, E, and F of Part 101 all apply as written, and need not be modified to accommodate FWA.

Subpart N - Fixed Wireless Access (New)

Similar to Digital Electronic Message Service (Subpart G) and Local Television Transmission Service (Subpart J), FWA-specific requirements could be included within a new Subpart N (Fixed Wireless Access). The proposed Subpart N would include the following:

Eligibility requirements: as discussed above, eligibility limits could be included in current Section 101.7, or placed in the new Subpart N. FWA stations will be treated as common carrier facilities.

Information to be included in each application: each application would identify the coverage area for the proposed Nodal Station(s), the specific sets of frequencies to be used with the Nodal Station(s), and the maximum number of User Stations to be served by each Nodal Station.

Licensing scheme: FWA Nodal Stations may be authorized only as a part of an integrated local or basic exchange system. The FWA User Stations associated with the Nodal Station would also be licensed to the FWA Nodal Station licensee. An FWA Nodal Station is always accompanied by and holds the license for associated FWA User Stations.

Permissible FWA communications: permissible communications include fixed subscriber access to any communication service provided by the carriers and consistent with the Commission's Rules. In addition, such communications may also include temporary transportable service, when authorized for emergency, disaster relief communications, or service restoration purposes, in recognition of the rapid deployment nature of FWA technology and its value during emergencies and disaster relief.

Special coordination requirements: as discussed above, because of FWA's proposed special co-primary status with the Department of Defense radio-location uses, special coordination requirements would be specified in Section 101.103 or the proposed new Subpart N. Under those procedures, in addition to the other Section 101.103 frequency coordination obligations, an FWA applicant must obtain certification from the U.S. Department of Defense, through the National Telecommunications and Information Administration, that coordination

has been completed. The FWA applicant would be required to include in its initial license application, license application amendment, license modification, and license renewal application, an NTIA/DoD certification that DoD uses will not suffer in any respect from the applicant's proposed use of the shared frequencies. As an element of that coordination process, vendors of equipment suitable for FWA use would submit their equipment for analysis by NTIA/JSC so as to determine the general frequency management and coordination requirements for the specific types of equipment. Then, during the NTIA/DoD coordination process for a specific station application, those general requirements would be applied according to the specific type of FWA equipment proposed for use.

Technical specifications: the available frequencies, banding plan, interference protection criteria, and other FWA-specific technical criteria would be included in the new Subpart N. As mentioned previously, these parameters are still being developed, and will be furnished to the Commission as soon as possible

Special temporary authority: in accordance with Section 101.31, the FWA rules would specify that the Commission may issue a special temporary, temporary, or conditional authorization for the construction and operation of FWA Nodal Stations and fixed or transportable User Stations, subject to all technical and frequency coordination requirements and DoD/NTIA certifications. In this manner, the Rules would recognize the rapid deployment nature of FWA technology and its value during emergencies and disaster relief

CERTIFICATE OF SERVICE

I, James Bucholz, hereby certify that on this 30th day of September, 1998, a true and correct copy of the foregoing PETITION FOR RULEMAKING was served by first class mail, postage prepaid, (unless otherwise indicated) upon the following:

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